DEPARTMENT OF PUBLIC SERVICE REGULATION
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA

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| IN THE MATTER OF the Petition of | ) | REGULATORY DIVISION |
| CAITHNESS BEAVER CREEK, LLC | ) | |
| To Set Terms and Conditions for | ) | DOCKET NO. 2019.06.034 |
| Qualifying Small Power Production | ) | (D2019.6.34) |
| Facility Pursuant to M.C.A. § 69-3-603 | ) | |

# Intervenor Testimony
# of
# Jaime T. Stamatson
# on Behalf
# of
# The Montana Consumer Counsel

August 21, 2019

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**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. Jaime T. Stamatson, Montana Consumer Counsel ("MCC"), 111 North Last Chance Gulch, Suite 1B, Helena, MT 59620-1703.

**Q. IN WHAT CAPACITY DOES THE MCC EMPLOY YOU?**

A. Since October 2012 I have been employed at the MCC as an Economist. My duties include participating in various stakeholder groups representing the interests of Montana utility consumers and providing economic analysis on regulatory issues appearing in dockets before the Montana Public Service Commission ("PSC" or "Commission").

**Q. PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS.**

A. I earned a Bachelor of Science degree in 2004 and a Master of Arts degree in 2007, both in Economics, from Kansas State University. Prior to my employment at the MCC, I was employed by the Kansas Corporation Commission ("KCC") from August 2008 to October 2012 as a Senior Research Economist where my duties included conducting research and providing economic analysis on regulatory issues before the KCC.

**Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?**

A. Yes, in Docket Nos. D2011.4.35, D2012.5.49, D2015.2.18, D2015.8.64, D2015.7.59, D2016.7.56, D2016.5.39, D2016.12.103, D2017.6.45, D2018.8.52 D2019.2.8, and D2019.2.9.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A. The purpose of my testimony is to comment on the petition of Caithness Beaver Creek, LLC ("CBC") to set terms and conditions for two Qualifying Facilities ("QFs"), Beaver Creek Wind II, LLC ("BCW II") and Beaver Creek Wind III, LLC ("BCW III") ("collectively the BCW Projects or Projects") pursuant to § 69-3-603. I will comment on five specific items;

1. CBC's proposed avoided cost of energy;
2. CBC's proposed avoided cost of capacity;
3. CBC's proposal for a carbon dioxide adder;
4. CBC's proposed contract length; and
5. CBC's proposal to self-supply ancillary services.

## INTRODUCTION

**Q. WHAT IS CBC PROPOSING IN THIS DOCKET?**

A. CBC is claiming it has incurred a Legally Enforceable Obligation ("LEO") with NorthWestern Energy ("NorthWestern") regarding two proposed 80 MW hybrid wind-battery storage facilities. Each facility is proposed to have a nameplate capacity of 60 MW with a 20 MW electrochemical battery storage system, allowing the QFs to shift their output and provide capacity during NorthWestern's peak periods.[1] CBC believes BCW II and III are each entitled to an avoided cost of energy rate of $49.10 Around the Clock, $58.18 per MWh for Heavy Load Hours, $38.46 per MWh for Light Load Hours, and an avoided cost of capacity of $152.07/kW/Year, all levelized over 25 years.[2]

**Q. PREVIOUSLY IN DOCKET NO. D2018.8.52, THE COMMISSION SET TERMS AND CONDITIONS FOR BCW I-IV. WHY IS CBC ASKING THE COMMISSION TO SET TERMS AND CONDITIONS FOR BCW II AND III SEPARATELY IN THIS DOCKET?**

A. In Docket No. D2018.8.52, CBC proposed that BCW I-IV were each to be 80 MW windfarms, each with a 10 MW electrochemical battery. In that docket and subsequent proceedings, NorthWestern raised multiple concerns about the

[1] *Petition,* p. 4.
[2] *Ibid,* p. 13.

BCW I-IV and their proposed configurations. Specifically, four concerns of note were:

1. BCW I-IV were not actually four separate projects under PURPA'S 1-Mile Rule requirements,
2. BCW I-IV in their proposed 80 MW wind, 10 MW battery configurations were each too large to qualify for PURPA avoided cost rates,
3. the batteries were too small for the Projects to be able perform as CBC claimed they could, and
4. the cumulative addition of 320 MW of wind from BCW I-IV would cause stress on NorthWestern's system.

Due to these concerns, CBC decided to go forward with two projects instead of four and reconfigure the two remaining projects with smaller nameplate capacities and larger batteries.[3]

**Q. WHAT ARE THE AVOIDED COST RATES NORTHWESTERN OFFERED TO CBC FOR THE BCW PROJECTS?**

A. NorthWestern did not calculate avoided cost rates for BCW II and III as proposed in this docket. CBC proposed these two Projects to NorthWestern as a settlement offer in Docket No. D2018.8.52, which NorthWestern rejected. CBC

[3] *Petition,* p. 2-3.

then self-certified BCW II and III with FERC and informed NorthWestern of its intent to withdraw its previous petition before the Commission in D2018.8.52. CBC then had Ascend Analytics calculate avoided cost rates for the two Projects using its own assumptions, which it offered to NorthWestern through a PPA on May 2, 2019. NorthWestern rejected CBC's offer, and CBC withdrew its petition in D2018.8.52.

Following CBC's withdrawal of its petition, NorthWestern and CBC communicated back and forth about data and assumptions needed for NorthWestern to be able to conduct avoided cost calculations for the two Projects. On May 31, 2019, NorthWestern signaled it was ready to conduct modelling runs as soon as it had modelling resources free, however no timeline was given. Following this communication, CBC believed that negotiations had broken down and that its avoided cost calculations as performed by Ascend Analytics were consistent with NorthWestern's avoided cost. Additionally, CBC asserts its self-executed PPA was based on NorthWestern's own submission in D2018.8.52 with minimal changes, allowing CBC to have formed a LEO on May 2, 2019, the date it offered NorthWestern a PPA.[4]

[4] *Petition,* p. 7-10.

## I. AVOIDED COST OF ENERGY

**Q. HOW DID CBC CALCULATE THE BCW PROJECTS' AVOIDED COST OF ENERGY?**

A. CBC had Ascend Analytics calculate the BCW Projects' avoided cost of energy with PowerSimm, using a combination of its own data and data developed by NorthWestern. CBC states that its own data consists of forward electricity and natural gas curves and wind and battery generation profiles.[5]

**Q. HOW DID CBC CALCULATE ITS FORWARD PRICE CURVES?**

A. CBC calculated its forward electricity price curve by first using forward prices for delivery at Mid-C obtained from Inter-Continental Exchange ("ICE"). These prices were for delivery in the months beginning April 2019 through December 2021 and were obtained for the 11 most recent trading days, covering March 27-29, 2019 April 1-5, 2019, and April 8-10, 2019. Each month's delivery prices were averaged over those dates out to December 2021, after which prices were escalated using annual escalation rates from the 2019 Annual Energy Outlook ("AEO") forecasts of nominal Henry Hub natural gas prices. CBC states this methodology only differs from NorthWestern regarding using 2019 AEO escalation rates versus 2018 AEO escalation rates.[6]

[5] *Prefiled Testimony of Kevin Durand*, p. 13.
[6] *Ibid*, p. 9.

CBC calculated its forward natural gas price curves using a similar approach, and they represent the natural gas prices at AECO Hub. These natural gas price forecasts were used to develop fuel prices for NorthWestern's natural gas generators.[7]

**Q. WHAT WIND AND BATTERY GENERATION PROFILES DID CBC USE?**

A. CBC appears to have used Typical Meteorological Year ("TMY") data as opposed to historical 8760 wind data. In response to Data Request NWE-018(c), CBC states that the input assumptions contained in *Exhibit NWE-018-c-1* are the input assumptions that it provided Ascend Analytics, with the instructions to run the model using the Commission's approved methodology. *Exhibit NWE-018-c-1* contains tab "BC 5 year 8760 Wind for 2 60 MW" which labels data for both Projects as TMY.

**Q. DO YOU HAVE CONCERNS WITH USING TMY DATA FOR MODELLING THE BCW PROJECTS' AVOIDED COST OF ENERGY?**

A. I do. NorthWestern has always used historical 8760 wind data as an input for modelling QF avoided costs in PowerSimm. In Docket No. D2018.8.52, NorthWestern's witnesses testified that the duplicate and constrained nature of TMY data significantly impacts the correlation between weather, wind

[7] *Ibid,* p. 10.

generation, and load, which is essential for proper avoided cost modelling in PowerSimm.[8]

**Q. DID CBC HAVE ASCEND ANALYTICS USE THE MONTHLY OR HOURLY VERSION OF THE POWERSIMM MODEL TO CALCULATE THE BCW PROJECTS' AVOIDED COST OF ENERGY?**

A. Ascend Analytics used the monthly version of PowerSimm to calculate the BCW Projects' avoided cost of energy. CBC states that it did contract with Ascend Analytics to conduct alternative PowerSimm modelling using the hourly version of the model, but as of the date of submitting its Petition in this docket this modelling had not been completed. Apparently Ascend Analytics has had issues getting the hourly version of the model to solve correctly with CBC's assumptions.[9]

**Q. DO YOU SUPPORT THE MONTHLY OR HOURLY VERSION OF POWERSIMM FOR CONDUCTING AVOIDED COST OF ENERGY MODELLING FOR QFS?**

A. All other things equal, I prefer the hourly model over the monthly model, as hourly granularity better reflects the realities of generator scheduling, dispatch and energy trading opposed to monthly averages of such activities. I do have

[8] *Prefiled Intervenor Testimony of Michael S. Babineaux,* p.15-16, Docket No. D2018.8.52.
[9] *Prefiled Testimony of Kevin Durand*, p. 22-23.

some concerns about Ascend Analytics not completing the hourly modelling prior to the submission of CBC's Petition, but I do not know exactly what was causing PowerSimm to not solve correctly. It could be a function of PowerSimm itself or CBC's assumptions, or both. It seems that NorthWestern has not had issues getting the hourly version of the model to solve in past dockets where it has used and advocated for that method.[10] I am aware the Commission has, so far, rejected use of the hourly model mainly due to its lack of tractability and transparency. I agree with the Commission that NorthWestern must alleviate these concerns before the hourly model becomes the status quo. Hopefully in this docket NorthWestern will make some strides toward accomplishing these goals.

**Q. DO YOU HAVE ANY OTHER CONCERNS WITH CBC'S AVOIDED COST OF ENERGY CALCUATIONS?**

A. Sometimes it helps to focus on the results of a model rather than the assumptions, as assumptions in a model don't matter if the model makes accurate predictions. In this case, the avoided cost of energy values CBC derived from its PowerSimm modelling are around double what the Commission has concluded in recent dockets to be just and reasonable avoided energy costs.[11] This fact alone should

[10] D2018.8.52, D2019.2.8, and D2019.2.9.
[11] In Docket Nos. D2019.2.8 and D2019.2.9, the Commission adopted a base avoided cost of energy of $24.38 per MWh ATC. In Docket No. D2018.8.52, the Commission adopted an avoided cost of energy of $22.97 per

give the Commission pause when evaluating the reasonableness of CBC's proposed avoided energy costs.

## II. AVOIDED COST OF CAPACITY

**Q. HOW DID CBC CALCULATE THE BCW PROJECTS' AVOIDED COST OF CAPACITY?**

A. CBC's avoided cost of capacity value of $152.07/kW-year is the capacity payment the Commission ordered in Docket No. D2018.8.52, *Order No. 7628b*, which is based on a 30-year amortization of an aero-derivative unit.[12] CBC assumes an initial aggregate capacity contribution of 50 MW for both Projects and that the initial year estimate and actual capacity contributions will be calculated based on a measure-and-pay approach using the SPP methodology with an annual true-up. CBC will secure a letter of credit as insurance in case of underperformance by the Projects[13]

MWh ATC. This is in comparison to the $49.10 per MWh ATC that CBC seeks for the BCW Projects in this docket.

[12] Response to Data Request PSC-008(b).

[13] *Prefiled Direct Testimony of Derrel A. Grant*, p. 5-6

**Q. DO YOU BELIEVE THIS IS AN APPROPRIATE ESTIMATE OF THE BCW PROJECTS' AVOIDED COST OF CAPACITY?**

A. I have several concerns with CBC's proposed avoided cost of capacity payment and associated payment calculation methodology.

First, the $152.07/kW-year avoided cost of capacity value is dated, as CBC admits in response to Data Request PSC-008(a). After CBC submitted testimony in this docket, NorthWestern revised the estimated avoided cost of capacity for an aero-derivative unit to $176/kW-year. While this value is likely fresh enough for use in ratemaking, whatever value the Commission decides upon should reflect the most recently available cost estimate for an aero-derivative unit on NorthWestern's system.

Second, there is a large discrepancy between CBC's initial estimate of the aggregate capacity contribution of both Projects and NorthWestern's estimate. NorthWestern estimated the initial capacity contribution of 23.06 MW for both projects, which is less than half of what CBC estimates.[14]

[14] Response to Data Request PSC-005(a) and attached *Exhibit PSC-005a-1* and *Exhibit PSC-005a-2.*

**Q. DO YOU SUPPORT A MEASURE AND PAY APPROACH FOR CALCULATING THE BCW PROJECTS' AVOIDED COST OF CAPACITY LIKE THE COMMSSION IMPLEMENTED IN DOCKET D2018.8.52, ORDER NO. 7628B?**

A. Yes, I do. I have been generally supportive of measure-and-pay approaches for calculating capacity payments for QFs, but I understand the Commission's reluctance to implement them. In D2018.8.52, the Commission put a lot of thought into the concerns of measure-and-pay but ultimately decided to implement such an approach for the same type of hybrid wind-battery technology that is proposed in this docket. I believe the work the Commission did in D2018.8.52 can easily be applied to this docket. That is, the Commission should determine a default capacity contribution for each BCW Project and use those default capacity contributions for the basis of capacity payments for the first three years. In the fourth year, NorthWestern can calculate capacity contributions using the previous three years of actuals based on the SPP methodology and in the fifth year, calculate capacity contributions using the previous four years of actuals based on the SPP methodology. In years six and later, capacity contributions can be calculated using a five-year rolling average of previous years. Capacity payments can be made on a monthly basis to provide CBC adequate cash flows.

## III. CARBON DIOXIDE COSTS

**Q. WHAT IS CBC PROPOSING REGARDING CARBON DIOXIDE COST IN THIS DOCKET?**

A. CBC is proposing a $3.03 per MWh carbon dioxide adder starting in 2028. It believes that this is consistent with the court order in Cause No. BVD-17-0776.

**Q. DO YOU BELIEVE THE COMMISSION SHOULD APPROVE A CARBON DIOXIDE ADDER IN THIS PROCEEDING?**

A. No, I do not. Currently the District Courts orders apply only to the proposed MTSUN project and QFs 3 MW or smaller that qualify for Standard Offer Rates under the QF-1 tariff. These decisions are currently under appeal to the Montana Supreme Court. Additionally, a stay of the ruling while it is under appeal has been ordered for small QFs by the Montana Supreme Court.[15]

**Q. WHAT IS YOUR POSITION REGARDING CARBON DIOXIDE COSTS IN THIS DOCKET?**

A. My position in this docket is the same as my position in previous QF dockets;[16] that renewable QFs are not entitled to the monetization of environmental

[15] See *Order* DA-190223.
[16] See *Direct Testimony of Jaime T. Stamatson,* p.10-12 and *Additional Issues Testimony of Jaime T. Stamatson,* p. 3-5, Docket No. D2016.5.39, *Direct Testimony of Jaime T. Stamatson,* p. 11-13, Docket No. D2016.12.103, *Direct Testimony of Jaime T. Stamatson,* p. 10-12, Docket No. D2017.6.45, *Direct Testimony of Jaime T. Stamatson,* p. 14-15, Docket No. D2018.8.52, *Direct Testimony of Jaime T. Stamatson,* p. 8, Docket No. D2019.2.8, and , *Direct Testimony of Jaime T. Stamatson,* p. 8, Docket No. D2019.2.9.

attributes in avoided cost rates under PURPA. The BCW Projects should retain their RECs, which represent the value of all environmental benefits associated with renewable generation. The Projects' owners can sell the RECs and gain an additional revenue stream that is not funded by NorthWestern's ratepayers.

**Q. WHAT ABOUT CBC'S ARGUMENT THAT CURRENT STATE AND REGIONAL INITITIVES IN THE WEST MAKE IT LIKELY CARBON DIOXIDE PRICING WILL INFLUENCE PRICES AT MID-C?**

A. If these policies are influencing or will influence future prices at Mid-C, it will be through changes in the generation mix and power flows, not through an explicit carbon dioxide adder. Such price influence will already be accounted for in current and forward Mid-C prices, and will already be captured through standard avoided cost of energy calculations. Absent an explicit Montana or Federal carbon dioxide tax or cap-and-trade scheme, Montana ratepayers should not be forced to pay for highly speculative costs that currently do not exist in the state.

## IV. CONTRACT LENGTHS

**Q. WHAT ARE YOUR THOUGHTS ON CBC'S PROPOSED CONTRACT LENGTHS FOR THE BCW PROJECTS?**

A. I believe the proposed 25-year contract lengths in this docket are excessively risky for ratepayers, and that the 15-year contract lengths the Commission applied in the latest QF-1 docket, MTSUN, New Colony, the first Caithness Beaver Creek Docket, Grizzly Wind, and Black Bear Wind should be applied in this Docket as well. I believe a 15-year contract strikes a balance between ratepayer protection against forecast risk and CBC's opportunity to secure financing for its projects. NorthWestern has executed a PPA with a 15-year term to purchase the output from the 80MW South Peak Wind project currently under development and expected to come online in the fourth quarter of 2019.[17] This indicates that 15-year contract lengths offer QF developers a reasonable opportunity to secure financing for their projects.

Additionally, there is evidence in the comments of the Northwest and Intermountain Power Producers Coalition and the Renewable Energy Coalition before the Washington Utilities and Transportation Commission[18] that 15-year

[17] http://www.northwesternenergy.com/our-company/media-center/current/news-article/2018/03/22/NorthWestern-Energy-Low-cost-qualifying-facility-to-add-80-megawatts-of-wind-to-Montana-portfolio

[18] See *In the Matter of Public Utilities Regulatory Policies Act, Obligations of the Utility to Qualifying Facilities*, WAC 480-107-105, p. 4-7, Docket No. U-161024.

contract lengths are adequate to secure project financing. If QF developers outside Montana can finance projects with 15-year fixed price terms, then presumably QF developers in Montana can too.

## V. ANCILLARY SERVICES

**Q. WHAT IS CBC'S PROPOSAL FOR THE BCW PROJECTS' ANCILLARY SERVICES NEEDS?**

A. CBC is proposing that the BCW Projects will self-supply ancillary services. According to CBC's calculations, the projects would be responsible for 1.8 MW of spinning reserves, 1.8 MW of contingency reserves, and 36.4 MW of INC/DEC.[19] This will be controlled by General Electric's Hybrid Plant Controller and Dispatch Optimizer software and signals from Automatic Generation Control ("AGC") equipment that will respond to commands from NorthWestern.[20] CBC has also previously stated ancillary services would be available to NorthWestern for purchase.[21]

[19] *Prefiled Direct Testimony of Hullas Sehgal*, p. 11.
[20] *Ibid*, p. 3-4.
[21] *Petition*, p. 9.

**Q. WHAT ARE YOUR THOUGHTS ON CBC'S CALCUATIONS OF THE BCW PROJECTS' ANCILLARY SERVICE REQUIREMENTS?**

A. I am troubled that CBC chose to use both TMY data coupled with the SPP methodology to calculate the Projects' ancillary services requirements instead of having Ascend Analytics use PowerFLEX, as NorthWestern does when having its avoided energy costs calculated. It is already questionable to use the SPP methodology to credit capacity contribution from battery storage, as it was not intended to calculated capacity contributions from intermittent resources, let alone ancillary services requirements.[22] PowerFLEX was designed specifically for this purpose, and it is constrained to ensure NorthWestern does not violate NERC Reliability Based Control ("RBC") standards. Additionally, NorthWestern benchmarks and validates the results against the *Variable Energy Resource Integration and Load Variability Study Final Report* ("VER Study")[2324], while there is no evidence CBC benchmarked and validated its results against the VER Study.

**Q. DOES THIS COMPLETE YOUR TESTIMONY?**

A. Yes.

[22] *Order 7628b,* p. 17, Docket No. D2018.8.52.
[23] *Prefiled Direct Testimony of Matthew W. Tanner,* Exhibit_(MWT-2), Docket No. D2018.2.12.
[24] *Order 7628b,* p. 21, Docket No. D2018.8.52.